ABSTRACT

A speech compression system capable of encoding a speech signal into a bitstream for subsequent decoding to generate synthesized speech is disclosed. The speech compression system optimizes the bandwidth consumed by the bitstream by balancing the desired average bit rate with the perceptual quality of the reconstructed speech. The speech compression system comprises a full-rate codec, a half-rate codec, a quarter-rate codec and an eighth-rate codec. The codecs are selectively activated based on a rate selection. In addition, the full and half-rate codec are selectively activated based on a type classification. Each codec is selectively activated to encode and decode the speech signals at different bit rates emphasizing different aspects of the speech signal to enhance overall quality of the synthesized speech. The overall quality of the system is strongly related to the excitation. In order to enhance the excitation, the system contains a fixed codebook comprising several subcodebooks. The invention reveals a way to apply a pitch enhancement efficiently and differently for different subcodebooks without using additional bits. The technique is particularly applicable to selectable mode vocoder (SMV) systems.